## SEQUENCE LISTING

```
<110> McGill University

<120> Oligonucleotide Inhibitors of MBD2/DNA
Demethylase and Uses Thereof
```

```
<130> 457-117PCT

<140> N/A
<141> 2003-06-20

<150> 60/389,926
<151> 2002-06-20

<160> 15

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 2584
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (0)...(0)
<223> cDNA MBD2/dMTase
```

<400> 1

1/11

SUBSTITUTE SHEET (RULE 26)

WU 2004/00104/

```
gaagcaggcg ggccggggcg gcggcgtctg tggccgtggc cggggccggg gccgtggccg 480
 gggacgggga cggggccggg gccggggccg cggccgtccc ccgagtggcg gcagcggcct 540
 tggeggegae ggeggegget geggeggegg eggeageggt ggeggeggeg ecceeggeg 600
 ggagccggtc cctttcccgt cggggagcgc ggggccgggg cccaggggac cccgggccac 660
ggagagcggg aagaggatgg attgcccggc cctcccccc ggatggaaga aggaggaagt 720
gatccgaaaa tctgggctaa gtgctggcaa gagcgatgtc tactacttca gtccaagtgg 780
 taagaagttc agaagcaagc ctcagttggc aaggtacctg ggaaatactg ttgatctcag 840
cagttttgac ttcagaactg gaaagatgat gcctagtaaa ttacagaaga acaaacagag 900
actgcgaaac gatcctctca atcaaaataa gggtaaacca gacttgaata caacattgcc 960
aattagacaa acagcatcaa ttttcaaaca accggtaacc aaagtcacaa atcatcctag 1020
taataaagtg aaatcagacc cacaacgaat gaatgaacag ccacgtcagc ttttctggga 1080
gaagaggcta caaggactta gtgcatcaga tgtaacagaa caaattataa aaaccatgga 1140
actacccaaa ggtcttcaag gagttggtcc aggtagcaat gatgagaccc ttttatctgc 1200
tgttgccagt gctttgcaca caagctctgc gccaatcaca gggcaagtct ccgctgctgt 1260
ggaaaagaac cctgctgttt ggcttaacac atctcaaccc ctctgcaaag cttttattgt 1320
cacagatgaa gacatcagga aacaggaaga gcgagtacag caagtacgca agaaattgga 1380
agaagcactg atggcagaca tettgtegeg agetgetgat acagaagaga tggatattga 1440
aatggacagt ggagatgaag cctaagaata tgatcaggta actttcgacc gactttcccc 1500
aagagaaaat tootagaaat tgaacaaaaa tgtttocact ggottttgcc tgtaagaaaa 1560
aaaatgtacc cgagcacata gagcttttta atagcactaa ccaatgcctt tttagatgta 1620
tttttgatgt atatatctat tattcaaaaa atcatgttta ttttgagtcc taggacttaa 1680
aattagtett ttgtaatate aageaggaee etaagatgaa getgagettt tgatgeeagg 1740
tgcaatctac tggaaatgta gcacttacgt aaaacatttg tttcccccac agttttaata 1800
agaacagatc aggaattcta aataaatttc ccagttaaag attattgtga cttcactgta 1860
tataaacata tttttatact ttattgaaag gggacacctg tacattcttc catcatcact 1920
gtaaagacaa ataaatgatt atattcacag actgattgga attctttctg ttgaaaagca 1980
cacacaataa agaacccetc gttageette etetgattta catteaacte tgateeetgg 2040
gccttaggtt tgacatggag gtggaggaag atagcgcata tatttgcagt atgaactatt 2100
gcctctggac gttgtgagaa ttgtgctttc accagaattt ctaagaattt ctgctaaata 2160
tcacctagca tgtgtaattt tttttccttg cctgtgactt ggacttttga tagttctata 2220
agaataaggc tttttcttcc cttgggcatg agtcagatac acaaggaccc ttcaggtgtt 2280
actagaaggc gtccatgttt attgtttttt aaagaatgtt tggcactctc taacgtccac 2340
tagettaetg agttateagg tgeaggteag actettgget acagtgagag geagetteta 2400
ggcagagttg cttaatgaaa gggtttgtaa tactttacaa accattacct gtacctggcc 2460
tggcctccaa aatattaaca ttcttttct gttgaaactc gcgagtgtaa ctttcatacc 2520
acttgaattt attgatattt aattatgaaa actagcatta cattattaaa cgatttctaa 2580
aatc
                                                                  2584
```

<210> 2

<211> 411 <212> PRT

<213> Homo sapiens

<400> 2

Met Arg Ala His Pro Gly Gly Gly Arg Cys Cys Pro Glu Glu Glu Glu 1 5 10 15

Gly Glu Ser Ala Ala Gly Gly Ser Gly Ala Gly Gly Asp Ser Ala Ile 20 25 30

Glu Gln Gly Gln Gly Ser Ala Leu Ala Pro Ser Pro Val Ser Gly
35 40 45

Val Arg Arg Glu Gly Ala Arg Gly Gly Gly Arg Gly Arg Gly Arg Trp
50 55 60

Lys Gln Ala Gly Arg Gly Gly Gly Val Cys Gly Arg Gly Arg Gly Arg 65 70 75 80

Gly Arg 85 90 95

Pro Pro Ser Gly Gly Ser Gly Leu Gly Gly Asp Gly Gly Gly Cys Gly
100 105 110

Gly Gly Gly Ser Gly Gly Gly Ala Pro Arg Arg Glu Pro Val Pro 115 120 125

Phe Pro Ser Gly Ser Ala Gly Pro Gly Pro Arg Gly Pro Arg Ala Thr 130 135 140

Glu Ser Gly Lys Arg Met Asp Cys Pro Ala Leu Pro Pro Gly Trp Lys
145 150 155

Lys Glu Glu Val Ile Arg Lys Ser Gly Leu Ser Ala Gly Lys Ser Asp
165 170 175

Val Tyr Tyr Phe Ser Pro Ser Gly Lys Lys Phe Arg Ser Lys Pro Gln
180 185 190

Leu Ala Arg Tyr Leu Gly Asn Thr Val Asp Leu Ser Ser Phe Asp Phe 195 200 205

Arg Thr Gly Lys Met Met Pro Ser Lys Leu Gln Lys Asn Lys Gln Arg 210 215 220

Leu Arg Asn Asp Pro Leu Asn Gln Asn Lys Gly Lys Pro Asp Leu Asn 225 230 235 240

Thr Thr Leu Pro Ile Arg Gln Thr Ala Ser Ile Phe Lys Gln Pro Val

Thr Lys Val Thr Asn His Pro Ser Asn Lys Val Lys Ser Asp Pro Gln 260 265 270

WO 2004/001027 PCT/CA2003/000884

Arg Met Asn Glu Gln Pro Arg Gln Leu Phe Trp Glu Lys Arg Leu Gln 280 Gly Leu Ser Ala Ser Asp Val Thr Glu Gln Ile Ile Lys Thr Met Glu 295 Leu Pro Lys Gly Leu Gln Gly Val Gly Pro Gly Ser Asn Asp Glu Thr 315 Leu Leu Ser Ala Val Ala Ser Ala Leu His Thr Ser Ser Ala Pro Ile 325 330 Thr Gly Gln Val Ser Ala Ala Val Glu Lys Asn Pro Ala Val Trp Leu 340 345 Asn Thr Ser Gln Pro Leu Cys Lys Ala Phe Ile Val Thr Asp Glu Asp 360 Ile Arg Lys Gln Glu Glu Arg Val Gln Gln Val Arg Lys Leu Glu 375 Glu Ala Leu Met Ala Asp Ile Leu Ser Arg Ala Ala Asp Thr Glu Glu 390 395 Met Asp Ile Glu Met Asp Ser Gly Asp Glu Ala 405 410

<210> 3

<211> 1953

<212> DNA

<213> Mus musculus

<220>

<221> misc\_feature

<222> (0)...(0)

<223> cDNA MBD2/dMTase

<400> 3

```
gggccgtggc cggggccggg cggccgtccc cagagtggcg gcagcggcct 540
 cccccggcgg gatcctgtcc ctttcccgtc ggggagctcg gggccggggc ccaggggacc 660
 ccgggccacg gagagcggga agaggatgga ctgcccggcc ctccccccg gatggaagaa 720
 ggaggaagtg atccgaaaat cagggctcag tgctggcaag agcgatgtct actacttcag 780
 tecaagtggt aagaagttea gaagtaaace teagetggea agatacetgg gaaatgetgt 840
 tgaccttagc agttttgact tcaggaccgg caagatgatg cctagtaaat tacagaagaa 900
 caagcagaga ctccggaatg accccctcaa tcagaacaag ggtaaaccag acctgaacac 960
 aacattgeca attagacaaa ctgcatcaat tttcaagcaa ccagtaacca aattcacgaa 1020
ccacccgagc aataaggtga agtcagaccc ccagcggatg aatgaacaac cacgtcagct 1080
tttctgggag aagaggctac aaggacttag cgcatcagat gtaacagaac aaattataaa 1140
aaccatggag ctacctaaag gtcttcaagg agtcggtcca ggtagcaatg acgagaccct 1200
totgtotgot gtggccagtg otttacacac aagototgog occatoacag gacaagtoto 1260
tgctgccgtg gaaaagaacc ctgctgtttg gcttaacaca tctcaacccc tctgcaaagc 1320
tttcattgtt acagatgaag acattaggaa acaggaagag cgagtccaac aagtacgcaa 1380
gaaactggag gaggcactga tggccgacat cctgtcccgg gctgcggaca cggaggaagt 1440
agacattgac atggacagtg gagatgaggc gtaagaatat gatcaggtaa ctttcgactg 1500
accttcccca agagcaaatt gctagaaaca gaattaaaac atttccactg ggtttcgcct 1560
gtaagaaaaa gtgtacctga gcacatagct ttttaatagc actaaccaat gcctttttag 1620
atgtattttt gatgtatata tctattattc caaatgatgt ttattttgaa tcctaggact 1680
aggtgcagtc tactggaaag gtagcactta cgtgaaatat ttgtttcccc cacagtttta 1800
atataaacag atcaggagta ccaaataagt ttcccaatta aagattatta tacttcactg 1860
tatataaaca gatttttata ctttattgaa agaagatacc tgtacattct tccatcatca 1920
ctgtaaagac aaataaatga ctatattcac aga
```

<210> 4 <211> 414

<212> PRT

<213> Mus musculus

<400> 4

 Met
 Arg
 Ala
 His
 Pro
 Gly
 Gly
 Gly
 Arg
 Cys
 Cys
 Pro
 Glu
 G

	50					53					60				
Lys	Gln	Ala	Ala	Arg	Gly	Gly	Gly	Val	Сув	Gly	Arg	Gly	Arg	GJ À	Arg
65					70					75					80
Gly	Arg	Gly	Arg	Gly	Arg	Gly	Arg	Gly	Arg	Gly	Arg	Gly	Arg	Gly	Arg
				85					90					95	
Pro	Gln	Ser	Gly	Gly	Ser	Gly	Leu	Gly	Gly	Asp	Gly	Gly	Gly	Gly	Ala
			100					105					110		
Gly	Gly	Cys	Gly	Val	Gly	Ser	Gly	Gly	Gly	Val	Ala	Pro	Arg	Arg	Asp
		115					120					125			
Pro	Val	Pro	Phe	Pro	Ser	Gly	Ser	Ser	Gly	Pro	Gly	Pro	Arg	Gly	Pro
	130					135					140				
Arg	Ala	Thr	Glu	Ser	Gly	Lys	Arg	Met	Asp	Cys	Pro	Ala	Leu	Pro	Pro
145					150			•		155					160
Gly	Trp	Lys	Lys	Glu	Glu	Val	Ile	Arg	Lys	Ser	Gly	Leu	Ser	Ala	Gly
				165					170					175	
Lys	Ser	Asp	Val	Tyr	Tyr	Phe	Ser	Pro	Ser	Gly	Lys	Lys	Phe	Arg	Ser
			180					185					190		
Lys	Pro	${\tt Gln}$	Leu	Ala	Arg	Tyr	Leu	Gly	Asn	Ala	Val	Asp	Leu	Ser	Ser
		195					200					205			
Phe	Asp	Phe	Arg	Thr	Gly	Lys	Met	Met	Pro	Ser	Lys	Leu	Gln	Lys	Asn
	210					215					220				
Lys	Gln	Arg	Leu	Arg	Asn	Asp	Pro	Leu	Asn	Gln	Asn	Lys	Gly	Lys	Pro
225					230					235					240
Asp	Leu	Asn	Thr		Leu	Pro	Ile	Arg		Thr	Ala	Ser	Ile	Phe	Lys
_				245					250					255	
Gln	Pro	Val		Lys	Phe	Thr	Asn		Pro	Ser	Asn	ГÀг		ГÀЗ	Ser
	_	~~ ~	260		_			265	_				270		
Asp	Pro		Arg	Met	Asn	Glu		Pro	Arg	Gin	Leu		Trp	Glu	Lys
"h ~~~~	T 011	275	al	T	0	<b>77</b> -	280	7	77_ 7	<b></b>		285	~ 7		_
AIG	290	GIII	GTĀ	теп	ser		ser	Asp	vaı	Thr	Glu	GIn	TTE	116	гла
Πh ~		<i>α</i> 1	T 0	Dwa	T	295	T 011	a1	<b>01</b>	17- 3	300	<b>.</b>	<b>0</b> 7		_
	Mec	GIU	ьеи	PLO		GIY	ьeu	GIII	GIA		Gly	Pro	GIY	ser	
305	Glu.	The second	7 011	T 033	310	77.	7707	7.7.	G	315	<b>.</b>	TT.3	m)		320
АБР	. G.Lu	TIIL	цеu	325	ser	MIG	val	нια		Ата	Leu	HIS	THE		ser
Δla	Pro	aſī	ть∽		G] n	ひって	Ser	Δl≏	330	T e 77	Glu	T 1	<b>7~~</b>	335	7.T.
. 1. U	~	***	340	GTĀ	GTII.	var	JUL	345	ara	val	GIU	пλя	350	PLO	ATG
Val	Tro	Len		Thr	Ser	Gln	Pro		Cvs	Live	Ala	Dhe		\721	Thr
	F	355					360	_~~	~y =	-75	n.a	2 C E	4.16	VUL	

Asp Glu Asp Ile Arg Lys Gln Glu Glu Arg Val Gln Gln Val Arg Lys 370 375 Lys Leu Glu Glu Ala Leu Met Ala Asp Ile Leu Ser Arg Ala Ala Asp 390 395 400 Thr Glu Glu Val Asp Ile Asp Met Asp Ser Gly Asp Glu Ala 405 410 <210> 5 <211> 18 <212> DNA <213> Artificial Sequence <220> <223> Antisense oligonucleotide <400> 5 ggcaatccat cctcttcc 18 <210> 6 <211> 18 <212> DNA <213> Artificial Sequence <220> <223> Antisense oligonucleotide <400> б. cttcctcctt cttccatc 18 <210> 7 <211> 17 <212> DNA <213> Artificial Sequence <220> <223> Antisense oligonucleotide

<400> 7

caacagtatt tcccagg 17 <210> 8 <211> 17 <212> DNA <213> Artificial Sequence <220> <223> Antisense oligonucleotide <400> 8 tgtagcctct tctccca 17 <210> 9 <211> 18 <212> DNA <213> Artificial Sequence <220> <223> Antisense oligonucleotide <400> 9 atccagccc ctccccag 18 <210> 10 <211> 18 <212> DNA <213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 10

cactetecee etececet

18

<210> 11

<211> 20

<212> DNA

<213> Artificial Sequence

<220>	
<223> Antisense oligonucleotide	
<400> 11	
tcaacagtat ttcccaggta	20
-	
<210> 12	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Antisense oligonucleotide	
<400> 12	
ucaacagtat ttcccaggua	20
<210> 13	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> oligonucleotide	
<400> 13	
auggaccctt tatgacaacu	20
<210> 14	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> oligonucleotide	
<400> 14	
cgattcaatc ctcacctctc	20

```
<210> 15
 <211> 2792
 <212> DNA
 <213> Homo sapiens
 <220>
 <221> misc_feature
 <222> (0)...(0)
 <223> cDNA MBD2/dMTase
 <400> 15
 gggggcgtgg ccccgagaag gcggagacaa gatggccgcc catagcgctt ggaggaccta 60
 agaggeggtg geeggggeea egeeeeggge aggagggeeg etetgtgege geeegeteta 120
 tgatgettge gegegteeee egegegeege getgegggeg gggegggtet eegggattee 180
 aagggetegg ttaeggaaga agegeagege eggetggga gggggetgga tgegegegea 240
 cccgggggga ggccgctgct gcccggagca ggaggagggg gagagtgcgg cgggcggcag 300
 cggcgctggc ggcgactccg ccatagagca ggggggccag ggcagcgcgc tcgccccgtc 360
cccggtgagc ggcgtgcgca gggaaggcgc tcggggcggc ggccgtggcc gggggcggtg 420
gaagcaggeg ggeegggeg geggegtetg tggeegtgge eggggeeggg geegtggeeg 480
gggacgggga cggggccggg gccggggccg cggccgtccc ccgagtggcg gcagcggcct 540
tggcggcgac ggcggcggct gcggcggcgg cggcagcggt ggcggcggcg ccccccggcg 600
ggagccggtc cctttcccgt cggggagcgc ggggccgggg cccaggggac cccgggccac 660
ggagagcggg aagaggatgg attgcccggc cctcccccc ggatggaaga aggaggaagt 720
gatccgaaaa tctgggctaa gtgctggcaa gagcgatgtc tactacttca gtccaagtgg 780
taagaagttc agaagcaagc ctcagttggc aaggtacctg ggaaatactg ttgatctcag 840
cagttttgac ttcagaactg gaaagatgat gcctagtaaa ttacagaaga acaaacagag 900
actgcgaaac gatcctctca atcaaaataa gctgcgctgg aacactcatc gtcctgcacc 960
atggcatgcg ctttcaagac tctgcttgct catacgctgt ttgctctgct tggaatgtgc 1020
ttaccccctt ccccttcatc tggtgaactc ctactcatcc aagacccagc ttcattgtct 1080
ccatctctgg gaagcctgcc ctgcatactc caggcagaac caatcctttc ctccataagg 1140
gtaaaccaga cttgaataca acattgccaa ttagacaaac agcatcaatt ttcaaacaac 1200
cggtaaccaa agtcacaaat catcctagta ataaagtgaa atcagaccca caacgaatga 1260
atgaacagec acgtcagett ttetgggaga agaggetaca aggaettagt geatcagatg 1320
taacagaaca aattataaaa accatggaac tacccaaagg tottcaagga gttggtccag 1380
gtagcaatga tgagaccett ttatetgetg ttgccagtge tttgcacaca agetetgege 1440
caatcacagg gcaagtctcc gctgctgtgg aaaagaaccc tgctgtttgg cttaacacat 1500
ctcaacccct ctgcaaagct tttattgtca cagatgaaga catcaggaaa caggaagagc 1560
gagtacagca agtacgcaag aaattggaag aagcactgat ggcagacatc ttgtcgcgag 1620
```

ctgctgatac agaagagatg gatattgaaa tggacagtgg agatgaagcc taagaatatg 1680 atcaggtaac tttcgaccga ctttccccaa gagaaaattc ctagaaattg aacaaaatg 1740 tttccactgg cttttgcctg taagaaaaa aatgtacccg agcacataga gctttttaat 1800 agcactaacc aatgcctttt tagatgtatt tttgatgtat atatctatta ttcaaaaaat 1860 catgtttatt ttgagtccta ggacttaaaa ttagtctttt gtaatatcaa gcaggaccct 1920 aagatgaagc tgagcttttg atgccaggtg caatctactg gaaatgtagc acttacgtaa 1980 aacatttgtt tcccccacag ttttaataag aacagatcag gaattctaaa taaatttccc 2040 agttaaagat tattgtgact tcactgtata taaacatatt tttatacttt attgaaaggg 2100 gacacctgta cattetteca teateactgt aaagacaaat aaatgattat atteacagae 2160 tgattggaat tetttetgtt gaaaagcaca cacaataaag aaccectegt tageetteet 2220 ctgatttaca ttcaactctg atccctgggc cttaggtttg acatggaggt ggaggaagat 2280 agcgcatata tttgcagtat gaactattgc ctctggacgt tgtgagaatt gtgctttcac 2340 cagaatttct aagaatttct gctaaatatc acctagcatg tgtaattttt tttccttgcc 2400 tgtgacttgg acttttgata gttctataag aataaggctt tttcttccct tgggcatgag 2460 tcagatacac aaggaccett caggtgttac tagaaggcgt ccatgtttat tgttttttaa 2520 agaatgtttg gcactctcta acgtccacta gcttactgag ttatcaggtg caggtcagac 2580 tettggetae agtgagagge agettetagg cagagttget taatgaaagg gtttgtaata 2640 ctttacaaac cattacctgt acctggcctg gcctccaaaa tattaacatt ctttttctgt 2700 tgaaactcgc gagtgtaact ttcataccac ttgaatttat tgatatttaa ttatgaaaac 2760 tagcattaca ttattaaacg atttctaaaa tc 2792

## This Page is Inserted by IFW Indexing and Scanning Operations and is not part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:
☐ BLACK BORDERS
☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
☐ FADED TEXT OR DRAWING
BLURRED OR ILLEGIBLE TEXT OR DRAWING
☐ SKEWED/SLANTED IMAGES
☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
☐ GRAY SCALE DOCUMENTS
☐ LINES OR MARKS ON ORIGINAL DOCUMENT
☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
□ OTHER:

## IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.